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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/676,523	09/29/2000	Louis Joseph Kerofsky	8371-98	2714
7590 02/22/2005 Marger Johnson & McCollom PC 1030 SW Morrison Street Portland, OR 97205			EXAMINER WU, JINGGE	
			ART UNIT 2623	PAPER NUMBER

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



### ***DETAILED ACTION***

Applicant's election without traverse of group II in paper No. 4 is acknowledged. Accordingly, Claims 1-31 are now presented for prosecution. Claims 32-35 are withdrawn from consideration.

### ***Specification***

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: claims 1 and 2 are directly contradicted. There is no support in the specification.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for when a given input-video-frame pixel's level is below the pixel level threshold, remapping that pixel according to an adaptive contrast-enhancing function; and when the given input-video-frame pixel's level is above the pixel level threshold, remapping that pixel according to a scene-stable mapping function, does not reasonably provide enablement for contradictory claim language of claim 2. The specification does not enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. claims 3-18 depend from claims 1, therefore, are rejected.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

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Claims 1-2, 6-13, 15, and 19-22, 24-27, 30 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6148103 to Nenonen.

As to claims 1-2 (under best understanding of the Examiner), Nenonen discloses a method of video contrast enhancement (abstract) comprising:

setting a first pixel level threshold for an input video frame in a video sequence (abstract, col. 5 lines 1-5);

when a given input-video-frame pixel's level is below the pixel level threshold, remapping that pixel according to an adaptive contrast-enhancing function (fig. 3 and 7, col. 4 line 57-col. 5 line 29 and col. 7 lines 1-28) ; and

when the given input-video-frame pixel's level is above the pixel level threshold, remapping that pixel according to a scene-stable mapping function (do not equalize) (fig. 3 and 7, col. 4 line 57-col. 5 line 40 and col. 7 lines 1-28).

As to claim 6, Nenonen further discloses the method of claim 1, wherein setting a first pixel level threshold comprises setting the threshold to a fixed level for at least the duration of a scene (col. 5 lines 1-5).

As to claims 7-8, and 12-13, Nenonen further discloses the method of claim 1, further comprising calculating the adaptive contrast-enhancing function to remap an input histogram of every frame for pixels below the pixel level threshold to a new histogram specification that the new histogram specification is a uniform distribution (fig. 3 and 7, col. 4 line 57-col. 5 line 40 and col. 7 lines 1-28).

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As to claims 9-10, Nenonen further discloses the method of claim 7, further comprising tabulating the input histogram from the pixels of one or more previous input video frames in the video sequence (abstract, col. 4 lines 13-56).

As to claim 11, Nenonen further discloses wherein tabulating the input histogram comprises maintaining each bin of the input histogram by exponentially time-filtering a corresponding bin as calculated for sequential frame histograms, each frame histogram representing one frame in the video sequence (col. 5 line 39-col. 6 line 24).

As to claim 15, Nenonen further discloses the method of claim 1, further comprising detecting substantial changes in scene histogram content from one frame of the video sequence to a following frame (abstract).

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As to claims 19-20, the claims are the corresponding apparatus claims to claims 1 and 7 respectively. The discussion are addressed with regard to claims 1 and 7.

As to claim 21, Nenonen discloses a video contrast enhancer (abstract) comprising:

a contrast-enhancing function generator (fig. 3) capable of accepting a target histogram specification and a set of histogram bins delivered from one or more frames of a video sequence (abstract), the bins (fig. 4) representing a histogram at least for pixel levels below a selected pixel level threshold (predetermined limit), the function generator capable of generating a remapping function for input pixel levels below the threshold based on the target histogram specification and the set of histogram bins; and a scene-stable mapper to control the remapping function for input pixel levels above the threshold (fig. 3 and 7, col. 4 line 57-col. 5 line 40 and col. 7 lines 1-28).

As to claims 22, 24-27, the elements of the claims are addressed with regard to claims 1, 7-11.

As to claim 30, Nenonen further discloses

a histogram calculator capable of constructing a frame histogram for an input video frame (fig. 3, 12);

a frame buffer (10) capable of buffering an input video frame until a remapping function can be calculated for that frame; ( fig. 3) and

a pixel remapper (16) capable of accepting a pixel level from the buffered input video frame and outputting a corresponding remapped pixel level according to the remapping function (fig. 3).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5, 14, 17-18, 23, 28-29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nenonen in view of US 5808697 to Fujimura et al.

As to claim 3, Nenonen does not explicitly mention setting another threshold.

Fujimura, in an analogous environment, discloses setting a second pixel level threshold (Y3) for an input video frame, the second threshold higher than the first (Y1) (fig. 16 a and B); and

when a given input-video-frame pixel's level is above the second pixel level threshold, remapping that pixel to a new level according to a second adaptive contrast-enhancing function (col. 12 lines 29-51).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Fujimura in the method of Nenonen in order to obtain better video frame contrast through histogram equalization (Fujimura, col. 1).

As to claim 4, the combination Nenonen and Fujimura does not explicitly mention the threshold is set by selecting percentage of the input video frames pixels below the threshold.



Examiner takes Official Notice that the feature is notoriously well known in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of selecting adaptive threshold in the method of Nenonen in order to obtain better mapping function and histogram equalization.

As to claim 5, Fujimura further discloses the threshold is estimated from pixel values obtained from the video input frames (fig. 8, maximum count selector).

As to claim 14, Fujimura further discloses the method of claim 1, wherein remapping for pixels both below and above the first pixel level threshold comprises using a pixel's level as an index to read a value from a common lookup table that combines the adaptive contrast-enhancing function and the scene-stable remapping function (fig. 22, col. 3 lines 50-51).

As to claims 17-18, Fujimura further discloses the method of claim 15, further comprising, when a substantial change in scene content is detected, allowing the scene-stable remapping linear function to change substantially (fig. 3a-b, col. 6 lines 18-64).

As to claims 23, 28-29, and 31, Every corresponding elements are addressed with regard to claims 3-4, 14 and 17-18.

***Subject Matter Not Taught In The Prior Art***

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Subject Matter taught in the claims 16 not found in the prior art. However, Examiner can not indicate allowability of these claims because of lack of enablement as addressed with regard to 35 U.S.C. 112 rejection.

### **Contact Information**

Any inquiry concerning this communication or earlier communications should be directed to Jingge Wu whose telephone number is (703) 308-9588. He can normally be reached Monday through Thursday from 8:00 am to 5:30 pm. The examiner can be also reached on second alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to TC customer service whose telephone number is (703) 306-0377.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amelia Au, can be reached at (703) 308-6604.

The Working Group Fax number is (703) 872-9314.

Jingge Wu

Primary Patent Examiner

